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and upper opposed deformable platens each of which includes elongated quench tubes which extend in a spaced apart relationship to each other in the direction of conveyance of the glass sheet and have quench openings; the lower platen having deformable drive shafts which extend between the elongated quench tubes and are oriented to be generally transverse to the direction of travel of the glass sheet, and which deformable drive shafts are rotatably supported by those quench tubes, and the lower platen also having drive wheels supported on the deformable drive shafts thereof at spaced locations to engage and move the glass sheet to be bent; the upper platen having idler shafts mounted on the elongated quench tubes thereof and also having idler wheels mounted by the idler shafts at spaced locations to engage the glass sheet to be bent; actuating means for causing deformation of the lower platen with the upper platen being conformably deformable to the shape of the lower platen as the lower platen is bent from a flat shape to a bent shape with the glass sheet disposed between the platens as the quench openings of the elongated quench tubes and the wheels are moved with the platens as the wheels engage and bend the glass sheet; means to supply quenching gas to the quench openings of both platens after bending has finished to thereby temper the bent glass sheet between the platens; and drive means for driving the drive wheels to move the glass sheets during the bending and tempering of the glass sheet.

### REMARKS

The pending claims are 1-16, which are identical to those claims originally allowed in the patent (except for minor amendments made to clarify the invention), independent claim 27, and independent claim 30. Each of claims 17-26, and 28-29, added by amendments during the pendency of the parent reissue applications to this case, have been canceled.

By this Amendment, the specification, claim 27, and claim 30 have been amended to clarify that which applicants' regard as the invention in response to rejections under 35 U.S.C. § 112. In particular, claim 27 has been amended to eliminate "substantially parallel", "substantially perpendicular", and "wherein said desired bent shape is parallel to

the quench tubes", which comprise part of the language considered by the Examiner to be new matter. Claim 27 has also been amended to specify that the quench tubes are "movable as a glass sheet is bent" to clarify the capability provided by the actuator in a manner consistent with the disclosure in the specification. While applicants do not consider language eliminated by this Amendment to be new matter, applicants have retained language, and introduced new language, into amended claim 27 which applicants believe clearly and distinctly describe the shape and orientation of the quench tubes, and the orientation of the deformable drive shafts with respect to the quench tubes in a manner which applicants believe is fully supported by the specification and drawings as originally filed.

Claim 30 was also amended in a manner consistent with the amendments to claim 27 for the above specified reasons. In addition, "reversible" has been removed, since it is an unnecessary limitation. (Note that the reversible drive feature is not an element of originally issued independent claims 1, 15, or 16).

Applicants have also amended a paragraph of the specification (at column 3, lines 28-40; and at column 5, lines 23-38) to clarify the description and provide verbatim correspondence between the specification and each of claims 27 and 30.

As more specifically set forth below, no new matter is added, since support for the added language is clearly found in the language of the specification and in Figures 1 and 2, interpreted in view of the supporting disclosure in the specification.

Each of claims 27 and 30 along with the supporting disclosure is provided below.

27. (New) An apparatus for uniformly tempering a glass sheet comprising:

opposed lower and upper platens

a glass bending and tempering apparatus  
*Col. 4, ll. 30-31.*

The bending and tempering apparatus includes a support that mounts the opposed bending platens at upper and lower locations

each of which includes elongated quench tubes which extend in a spaced apart relationship to each other in the direction of conveyance of the glass sheet and have quench openings;

the lower platen having deformable drive shafts which extend between the elongated quench tubes and are oriented to be generally transverse to the direction of travel of the glass sheet, and which deformable drive shafts are rotatably supported by those quench tubes, and

the lower platen also having drive wheels supported on the deformable drive shafts at spaced locations to engage and move the glass sheet;

an actuator connected to the lower platen the quench tubes of the lower and upper platens are movable as a glass sheet is bent to generally conform the tubes to a desired bent shape of a glass sheet;

with respect to each other  
*Col. 3, ll. 9-12; Col. 5, ll. 23-25.*

A plurality of elongated [Q]quench tubes which extend in a spaced apart relationship to each other in the direction of conveyance of the glass sheet define the quench openings of the lower platen.

*Col. 3, ll. 32-33; Figs. 1-3.*

elongated quench tubes which extend in a spaced apart relationship to each other in the direction of conveyance of the glass sheet define the quench openings of the upper platen

*Col. 3, ll. 38-39; Figs. 1-3.*

The lower platen includes deformable drive shafts, drive wheels mounted on the drive shafts to engage the heated glass sheet and provide movement thereof during platen deformation that provides the bending. A plurality of elongated [Q]quench tubes which extend in a spaced apart relationship to each other in a direction of conveyance of the glass sheet define the quench openings of the lower platen. The drive shafts extend between the elongated quench tubes, are oriented to be generally transverse to the direction of travel of the glass sheet, and the quench tubes rotatably support the drive shafts thereof

*Col. 3, ll. 28-35.; Figs. 1-3.*

Actuator 16 is controllable to control the amount of bending or deformation of the first platen 14 across the platen 14.

*Col. 4, ll. 54-56.*

The quench openings 18 are movable with the platen 14 during deformation of the platen which performs the bending.

*Col. 4, ll. 58-61.*

and means to supply quenching gas through the quench tubes to uniformly temper a glass sheet therebetween.

30. (New) A glass sheet bending and tempering apparatus comprising:

lower and upper opposed deformable platens

each of which includes elongated quench tubes which extend in a spaced apart relationship to each other in the direction of conveyance of the glass sheet and have quench openings;

the lower platen having deformable drive shafts which extend between the elongated quench tubes and are oriented to be generally transverse to the direction of travel of the glass sheet, and which deformable drive shafts are rotatably supported by those quench tubes, and the lower platen also having drive wheels supported on the deformable drive shafts thereof at spaced locations to engage and move the glass sheet to be bent;

Quenching gas is supplied to the quench openings of both platens 14,22 and thereby to both sides of glass sheet 12 to temper the bent glass sheet between the platens.

*Col. 5, ll. 10-13.*

a glass bending and tempering apparatus  
*Col. 4, ll. 30-31.*

The bending and tempering apparatus includes a support that mounts the opposed bending platens at upper and lower locations with respect to each other

*Col. 3, ll. 9-12; Col. 5, ll. 23-25.*

A plurality of elongated [Q]quench tubes which extend in a spaced apart relationship to each other in the direction of conveyance of the glass sheet define the quench openings of the lower platen.

*Col. 3, ll. 32-33; Figs. 1-3.*

elongated quench tubes which extend in a spaced apart relationship to each other in the direction of conveyance of the glass sheet define the quench openings of the upper platen

*Col. 3, ll. 38-39; Figs. 1-3.*

The lower platen includes deformable drive shafts, drive wheels mounted on the drive shafts to engage the heated glass sheet and provide movement thereof during platen deformation that provides the bending. A plurality of elongated [Q]quench tubes which extend in a spaced apart relationship to each other in the direction of conveyance of the glass sheet define the quench openings of the lower platen. The drive shafts extend between the elongated quench tubes, are oriented to be generally transverse to the direction of travel of the glass sheet.

*Col. 3, ll. 28-35.; Figs. 1-3.*

the upper platen having idler shafts mounted on the elongated quench tubes and also having idler wheels mounted by the idler shafts at spaced locations to engage the glass sheet to be bent;

actuating means for causing deformation of the lower platen with the upper platen being conformably deformable to the shape of the lower platen as the lower platen is bent from a flat shape to a bent shape with the glass sheet disposed between the platens as the quench openings of the elongated quench tubes and

the wheels are moved with the platens as the wheels engage and bend the glass sheet;

means to supply quenching gas to the quench openings of both platens after bending has finished to thereby temper the bent glass sheet between the platens;

and drive means for driving the drive

the upper platen 22 includes idler shafts 38 and idler wheels 40 mounted on the idler shafts to engage the heated glass sheet 12 and to rotate with movement of the glass sheet. As with the lower platen 14, quench tubes 32 define the quench openings 18 of the upper platen 22 and rotatably support the idler shafts 38.

*Col. 5, ll. 54-60.*

The lower platen 22 is deformable and has a connection to actuator 16 so as to deform the lower platen from the planar shape to the bent shape. The upper platen 22 is initially conformingly deformable to the shape of the lower platen 14 as the heated glass sheet 12 is moved with the lower platen and bent between the platens. Both of the platens 14,22 subsequently conform to the shape of template 24 as the lower platen 14 is moved toward the template and the glass sheet is bent to its final bent shape. Both of the platens 14,22 include quench openings 18 that move with the platens during the deformation of the platens and subsequently supply quenching gas to temper the bent glass sheet.

*Col. 5, ll. 26-38; Figs. 2-3.*

the upper platen 22 includes idler shafts 38 and idler wheels 40 mounted on the idler shafts to engage the heated glass sheet 12 and to rotate with movement of the glass sheet. As with the lower platen 14, quench tubes 32 define the quench openings 18 of the upper platen 22 and rotatably support the idler shafts 38.

*Col. 5, ll. 54-60.*

Quenching gas is supplied to the quench openings of both platens 14,22 and thereby to both sides of glass sheet 12 to temper the bent glass sheet between the platens.

*Col. 5, ll. 10-13.*

A control 34 and reversible drive electric

wheels to move the glass sheets during the bending and tempering of the glass sheet.

motors 36 drive drive wheels 30 to index the glass sheet 12 into the glass bending and tempering apparatus, oscillate the glass sheet during the bending and tempering  
*Col. 5, ll. 47-51.*

The specification including the amendments filed August 14, 2000 was objected to under 35 U.S.C. 132 as introducing new matter into the disclosure. The following added language was specifically objected to:

- (1) **"A plurality of elongated quench tubes which are substantially parallel to each other"**
- (2) **"The drive shafts extend between the elongated quench tubes, are oriented to be substantially perpendicular to those quench tubes."**
- (3) **"Similarly, elongated, substantially parallel quench tubes define the quench openings"**
- (4) **"the upper platen 22 is initially conformingly deformable to the shape of the lower platen 14 as the heated glass sheet is moved with the lower platen and bent between the platens about a direction generally parallel to the elongated direction of the quench tubes."**

**(Objectionable language in bold).**

Applicants' believe the specification, as now amended, satisfies the requisites of 35 U.S.C. 132 for the following reasons:

In contrast to the language objected to in subparagraph (1) above, the specification, as now amended, reads "a plurality of elongated quench tubes which extend in a spaced apart relationship to each other in the direction of conveyance of the glass sheet define the quench openings of the lower platen." The language added to the language of the original patent specification is "a plurality of elongated", and "which extend in a spaced apart

relationship to each other in the direction of conveyance of the glass sheet". It is submitted that "a plurality of elongated" is not new matter since the original specification states "quench tubes 32 define the quench openings 18 of the lower platen 14" (at col. 5, ll. 44-45) and "the first platen includes quench openings 18 throughout a surface 20 of the platen, best seen in Figure 2." (At col. 4, ll. 57-58). This language read with reference to Figure 2, clearly identifies the quench tubes 32 as being a plurality and elongated. The disclosure of "tubes" indicates a plurality of tubes. And, though the word "elongated" did not appear in the original specification, this word clearly and accurately describes the shape of the quench tubes 32 shown in Figures 1, 2, and 3. Indeed, Websters College Dictionary defines elongated as "long and thin".

The same language from the specification and Figures 1-3 similarly support the remaining new language specifying that the quench tubes "extend in a spaced apart relationship to each other in the direction of conveyance of the glass sheet." In particular, Figure 1 includes glass sheet 12, and the supporting language of the specification states "[a] apparatus 10 comprises a first platen 14 for receiving the heated glass sheet 12 to be bent." (Col. 4, ll. 45-47). Also, the original language of the specification stated "quench tubes 32 define the quench openings 18 of the lower platen 14 and rotatably support drive shafts 28 such that the drive wheels 30 move the heated glass sheet 12..." (Col. 5, ll. 44-47). The original language of the specification also stated "a control 34 and reversible drive electric motors 36 drive drive wheels 30 to index the glass sheet 12 into the glass bending and tempering apparatus, oscillate the glass sheet during the bending and tempering and index the glass sheet out of the apparatus..." (Col. 5, ll. 47-53). This language, coupled with the clear illustrations of Figure 2, to which the language refers, illustrate clearly and unambiguously that the quench tubes are spaced apart from each other. As well, this language, coupled with Figures 1 and 2, disclose unmistakably that the elongated quench tubes extend in the direction of conveyance of the glass sheet.

As to the language objected in subparagraph (2) above, the specification has been amended, eliminating “substantially perpendicular”. The above-cited language from the original specification, and the illustration of Figure 2 in particular, support the now amended language of the specification which replaces the language objected to in subparagraph 2 above. This new language specifies “the drive shafts extend between the elongated quench tubes, are oriented to be generally transverse to the direction of travel of the glass sheet, and the quench tubes rotatably support the drive shafts thereof...” (new language underlined). In particular, the language in the original specification describing the drive shafts being rotatably supported by the quench tubes, coupled with the clear illustration of Figure 2 (for the lower platen) and Figure 3 (for the upper platen) provide clear support for the new language added by amendment that the drive shafts are “oriented to be generally transverse to the direction of travel of the glass sheet”. Again, the original specification unambiguously states that the “quench tubes 32...rotatably support drive shaft 28 such that the drive wheels move the heated glass sheet 12 during the bending and quenching.” (Col 5, ll. 44-47). This language describes the arrangement clearly and unambiguously depicted in Figure 2, which clearly illustrates that the rotation of the wheels on the flexible shafts supported by the elongated tubes clearly requires that the shafts be mounted in a direction generally transverse to the direction of conveyance of the glass sheet for the driven wheels 30 to drive the glass sheet in and out of the apparatus as shown in Figure 1.

As for the objected language of subparagraph (3), applicants have omitted the language specifying that the quench tubes “are substantially parallel to each other”. As well, applicants’ have omitted the language of subparagraph (4) specifying that the glass sheet is bent “about a direction parallel to the elongated direction of the quench tubes.” These specific objections are therefore moot.

The language added by the present amendment now clearly describes the general shape (elongated) of the quench tubes, their general location (spaced apart from each other), and the general orientation of the flexible shafts (generally transverse to the direction of travel of the glass sheet) in a manner that is conveyed by the drawings and supporting language of the specification. As such, the specification as presently amended is believed to satisfy the

requisites of 35 U.S.C. 132. For these reasons, applicants respectfully request entry of these proposed amendments to the specification

Claims 27 and 30 were rejected under 35 U.S.C. § 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, has possession of the claimed invention. It should be noted that the “substantially parallel” and “substantially perpendicular” language has been eliminated from the specification and claims. For the reasons cited above, the language of claims 27 and 30 as now amended, are believed to be clearly supported by the original specification, as well as by Figures 1-3 as originally filed. The language added to these claims as now amended, as well as the language added to the specification, is believed to accurately describe the shape and orientation of the quench tubes, and the orientation of the flexible shafts in a way that is clearly and unambiguously conveyed in the original specification and drawings. Claims 27 and 30 as amended herein, are clearly supported by the written description as amended, as well as by Figures 1-3 as originally filed for the reasons cited above. Thus, both the written description and the Figures provide antecedent basis for claim 27 and amended claim 30. As such, these claims are believed to satisfy the requisites of Section 112.

Claim 27 was also rejected under 35 U.S.C. 251 as being improperly broadened in a reissue application made and sworn to by the assignee and not the patentee. Applicants respectfully traverse this rejection. This is a broadening reissue. It was filed within the appropriate time period and sworn to by the patentees.

Claim 27 was also rejected under 35 U.S.C. 251 as being an improper recapture of broadened claim subject matter surrendered in the application for the patent upon which the present reissue is based. Applicants also respectfully traverse this rejection. Applicants acknowledge that claims directed to a glass sheet tempering apparatus were presented in a parent application, Serial No. 07/083,685. Those three claims were cancelled in response to a rejection under 35 U.S.C. 102(e) as being anticipated by Kahle (U.S. Patent No. 4,376,643). However, it is clear from the cases cited by the Examiner that the presentation of claim 27 by

applicants in this reissue is not recapture, since the scope of claim 27 is narrower than the scope of any of the three claims which were cancelled in the parent application.

As outlined by the Federal Circuit in *In re Clement*:

In both *Mentor* and *Ball*, the relevance of the prior art rejection to the aspects narrowed in the reissue claims was an important factor in our analysis. From the results and reasoning of those cases, the following principles flow:

- (1) if the reissue claim is as broad or broader than the cancelled or amended claim in all respects, the recapture rule bars the claim;
- (2) if it is narrower in all aspects, the recapture rule does not apply, but other rejections are possible;
- (3) if the reissue claim is broader in some aspects, but narrower in others, than:
  - (a) if the reissue claim is as broad as or broader in an aspect germain to a prior art rejection, but narrower in another aspect completely unrelated to the rejection, the recapture rule bars the claim;
  - (b) if the reissue claim is narrower in an aspect germain to prior art rejection, and broader in an aspect unrelated to the rejection, the recapture rule does not bar the claim, but other rejections are possible.

*In re Clement*, Fed. 3<sup>rd</sup>, 1464, 1470 (Fed Cir. 1997).

In the present application, claim 27 is narrower in all aspects than the previously cancelled claims. In particular, claim 27 specifies the following elements not found

in any of the cancelled claims:

- (1) [the lower platen] having deformable drive shafts.
- (2) which deformable shafts are rotatably supported by those quench tubes.
- (3) [the lower platen] also having drive wheels supported on the deformable drive shafts thereof at spaced locations to engage and move the glass sheet
- (4) an actuator connected to the lower platen so the quench tubes are movable as a glass sheet is bent to generally conform the tubes to a desired bent shape of a glass sheet
- (5) elongated [tubes]
- (6) which extend in a spaced apart relationship to each other
- (7) in the direction of conveyance of the glass sheet

The language defining element numbers 1-4 is found verbatim in the original specification. The language describing elements 5-7 is found in the reissue application as presently amended. In both cases, this language clearly describes a tempering apparatus that is narrower in many respects to the tempering apparatus of claims 12-14 in the parent application. As such, recapture does not apply.

It should be noted that, though original claims 12-14 were cancelled in a parent application, it is clear from the original specification of the application of the '527 patent that applicants did not intend to surrender their right to any claim for a tempering apparatus. The application that issued into the '527 patent (the subject of this reissue application) was filed on September 27, 1988 with the title "BENT GLASS SHEET QUENCH," and include the object "to provide an apparatus that has movable quench openings that move with the surfaces of the glass sheet to provide equal thermal conditions during tempering and a more uniformly tempered glass sheet." (Col. 2, ll. 38-42). This application was filed *after* claims 12-14 (the claims directed to a quenching apparatus in the parent application) *were cancelled* by amendment in that application on May 11, 1988. It is thus clear that, although applicants erroneously omitted claims to the quench, they did not consciously intend to surrender that

subject matter. In any event, the recapture rule is clearly inapposite to claim 27 which is narrower in scope to any of the three previously cancelled claims.

As such, applicants respectfully request reconsideration and withdrawal of the recapture rejection.

The Terminal Disclaimer was objected to as not in compliance with 37 C.F.R. 1.321(b). A THIRD SUBSTITUTE DISCLAIMER TO OBLIVIATE A DOUBLE PATENTING REJECTION OVER A PRIOR PATENT, signed by an officer of the assignee, Glasstech, Inc. is submitted herewith, and is believed to satisfy the requisites of 37 C.F.R. 1.321(b) since it now clearly identifies the current application as Serial No. 08/655,853 as required. As such, this Terminal Disclaimer is believed to overcome the obviousness-type double patenting rejection of claims 1-16.

In light of the foregoing, as well as for the reasons set forth in applicants' prior amendments in this and the parent reissue cases, reconsideration and allowance of claims 27 and 30 is requested.

The Examiner is urged to contact the undersigned attorney by telephone to discuss any matters pertaining to this reissue application if he believes it will be useful in expediting this application.

A check in the amount of \$250.00 is enclosed to cover the (\$195.00) Petition for Extension of Time fee and (\$55.00) Terminal Disclaimer Fee. Please charge any additional fees or credit any overpayments as a result of the filing of this paper to our Deposit Account No. 02-3978 -- a duplicate of this paper is enclosed for that purpose.

Respectfully submitted,  
**HAROLD A. McMASTER ET AL.**

By

  
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